National Institute of Environmental Health Sciences

Managing uncertainty: A review of food system scenario analysis and modelling

Author(s): Reilly M, Willenbockel D
Year: 2010
Journal: Philosophical Transactions of The Royal Society of London. Series B, Biological Sciences. 365 (1554): 3049-3063

Abstract:

Complex socio-ecological systems like the food system are unpredictable, especially to long-term horizons such as 2050. In order to manage this uncertainty, scenario analysis has been used in conjunction with food system models to explore plausible future outcomes. Food system scenarios use a diversity of scenario types and modelling approaches determined by the purpose of the exercise and by technical, methodological and epistemological constraints. Our case studies do not suggest Malthusian futures for a projected global population of 9 billion in 2050; but international trade will be a crucial determinant of outcomes; and the concept of sustainability across the dimensions of the food system has been inadequately explored so far. The impact of scenario analysis at a global scale could be strengthened with participatory processes involving key actors at other geographical scales. Food system models are valuable in managing existing knowledge on system behaviour and ensuring the credibility of qualitative stories but they are limited by current datasets for global crop production and trade, land use and hydrology. Climate change is likely to challenge the adaptive capacity of agricultural production and there are important knowledge gaps for modelling research to address.

Source: http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2935120

Resource Description

Climate Scenario :

specification of climate scenario (set of assumptions about future states related to climate)

Special Report on Emissions Scenarios (SRES), Other Climate Scenario

Special Report on Emissions Scenarios (SRES) Scenario: SRES A1, SRES A2, SRES B1, SRES B2

Other Climate Scenario: A1FI;World Agriculture towards 2030/2050;Comprehensive Assessment of Water Management in Agriculture (CAWMA);Millennium Ecosystem Assessment (MA) scenarios;Agrimonde 1 scenario

Communication:

resource focus on research or methods on how to communicate or frame issues on climate change; surveys of attitudes, knowledge, beliefs about climate change

A focus of content

Communication Audience: ☑

audience to whom the resource is directed

Researcher

Exposure : ☑

weather or climate related pathway by which climate change affects health

Food/Water Security

Geographic Feature: ☑

resource focuses on specific type of geography

None or Unspecified

Geographic Location: ☑

resource focuses on specific location

Global or Unspecified

Health Impact: ☑

specification of health effect or disease related to climate change exposure

Malnutrition/Undernutrition

Mitigation/Adaptation: ☑

mitigation or adaptation strategy is a focus of resource

Adaptation

Model/Methodology: ☑

type of model used or methodology development is a focus of resource

Exposure Change Prediction

Population of Concern: A focus of content

Population of Concern: ☑

populations at particular risk or vulnerability to climate change impacts

Children, Low Socioeconomic Status

Resource Type: ☑

format or standard characteristic of resource

Review

Socioeconomic Scenario: Other Socioeconomic Scenario

Other Socioeconomic Scenario: Agrimonde 1 scenario

☑

Timescale: ☒

time period studied

Medium-Term (10-50 years)

Vulnerability/Impact Assessment: ☒

resource focus on process of identifying, quantifying, and prioritizing vulnerabilities in a system

A focus of content